



Gas phase synthesis of methylene lactones using novel grafted catalyst

Description of Technology: The invention pertains to a method of producing unsubstituted and substituted alpha-methylene lactones by a gas phase reaction of starting lactones with formaldehyde in the presence of a novel grafted catalyst that not only exhibits high initial activity (conversion), but also maintains a high level of activity with time on stream.

Patent Listing:

1. **US Patent No. 7,161,014**, Issued January 9, 2007, “Gas phase synthesis of methylene lactones using novel grafted catalyst”

<http://patft.uspto.gov/netacgi/nph-Parser?Sect2=PTO1&Sect2=HITOFF&p=1&u=%2Fnetacgi%2FPTO%2Fsearch-bool.html&r=1&f=G&l=50&d=PALL&RefSrch=yes&Query=PN%2F7161014>

Market Potential: Alpha-methylene-gamma-butyrolactone and methyl alpha-methylene-gamma-butyrolactone are useful monomers in the preparation of both homopolymers and copolymers. In addition, the alpha-methylene-gamma-butyrolactone group is an important structural feature of many sesquiterpenes of biological importance.

Current ways of making alpha-methylene-gamma-butyrolactone monomer are unattractive because of low yields, byproducts formation and/or expensive starting materials.

In particular, U.S. Pat. No. 6,313,318 describes a method for converting certain starting lactones to alpha-methylene substituted lactones using a so-called basic catalyst that is made by treating silica with an inorganic salt of Ba, Mg, K, Cd, Rb, Na, Li, Sr, and La. A problem inherent in the method is that there is a significant decrease in the conversion of the starting lactone to the alpha-methylene product with time on stream (TOS).

It would be advantageous, therefore, to have a lactone conversion process that not only exhibits high initial activity (conversion), but also maintains a high level of activity with time on stream.

Benefits:

- Exhibits high initial activity
- Maintains a high level of activity with time on stream

Applications:

- Production of lactones

Contact: Ken Anderson

Director, Entrepreneurial & Small Business Support, Delaware Economic Development Office (DEDO)
Carvel State Building, 820 French Street, Wilmington, DE, 19801
Phone: (302) 577-8496, Fax: (302) 577-8499, Email: Kenneth.R.Anderson@state.de.us